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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/000,330	05/20/1998	TORU NAKAMURA	514420-3596	5116
23416	7590	05/03/2004	EXAMINER	
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P O BOX 2207			ART UNIT	
WILMINGTON, DE 19899			PAPER NUMBER	

1756

DATE MAILED: 05/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/000,330	Applicant(s) NAKAMURA ET AL.	
	Examiner Janis L. Dote	Art Unit 1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-19,21 and 24-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-19,21 and 24-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. The examiner acknowledges the amendments to claims 16-18 and 26, the cancellation of claims 22 and 23, and the addition of claims 28-35, filed on Feb. 9, 2004 (Amdt020904). Claims 16-19, 21, and 24-35 are pending.

The amendment to the claims filed on Oct. 14, 2003 (Amdt101403), was not in compliance with 37 CFR 1.121 for the reasons discussed in the PTO communication mailed on Jan. 20, 2004. Thus, the amendment to the claims filed in Amdt101403 was not entered.

2. The rejection of claim 22/16 under 35 U.S.C. 112, second paragraph, set forth in the office action mailed on May 9, 2003 (CTNF050903), page 8, has been mooted by the cancellation of claim 22 filed in Amdt020904.

The rejections of claims 16, 17, 18, 19/(17,18), 21-25/(16,17,18), 26, and 27 under 35 U.S.C. 112, first paragraph, set forth in CTNF050903, pages 9-11, items (1) and (4), have been withdrawn in response to the amendments to claims 16-18, the cancellation of claim 22, and the addition of claim 34 filed in Amdt020904.

The rejection of claims 16, 23/16, 24/16, and 25/16 under 35 U.S.C. 103(a) over Japanese Patent 2-184864 (JP'864) (see PTO translation for cites) combined with page 13 of Grant & Hackh's

Art Unit: 1756

Chemical Dictionary, fifth ed., and Diamond, Handbook of Imaging Materials, page 169, set forth in CTNF050903, pages 11-13, has been withdrawn in response to the amendment to claim 16, adding the limitation that the alicyclic compound has one double bond. As discussed in the rejection, JP'864 discloses a polyolefin resin obtained from alicyclic compound having two double bonds, diallyltricyclo(5,2,1,0^{2,6})-decane, which is outside the scope of alicyclic compound having one double bond.

The terminal disclaimer filed on Feb. 9, 2004 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US application 09/331,729 has been reviewed and is accepted. The terminal disclaimer has been recorded. Accordingly, the rejection of claims 16, 21/16, 22/16, 23/16, 24/16, 25/16, and 26 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 35-57 of copending Application No. 09/331,729, set forth in CTNF0508903, pages 20-22, has been withdrawn.

3. The amendment filed on Dec. 2, 2002 (Amdt120202), is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention.

Art Unit: 1756

The added material which is not supported by the original disclosure is as follows:

(1) The amendment at page 3, line 11, of the specification, adding the disclosure that the intrinsic viscosity "is measured in decalin at 135°C," lacks antecedent basis in the originally filed specification. The originally filed specification does not disclose any conditions under which the intrinsic viscosity is determined. The working examples merely recite the values of intrinsic viscosity. Accordingly, the originally filed specification does not provide an adequate written description that the intrinsic viscosity is measured in decalin at 135°C, as now disclosed in the amendment to the specification.

(2) The amendment at page 3, line 11, of the specification, adding the disclosure describing the conditions set forth in the German standard DIN 53461-B (January 1987) for determining values of the heat-distortion temperature (HDT), lacks antecedent basis in the originally filed specification. The originally filed specification does not define the German standard DIN 53461-B, or the experimental conditions under which the HDT is determined. Nor does the originally filed specification disclose the date of the particular version of the standard that was used.

Applicants are required to cancel the new matter in the reply to this Office Action.

Applicants' arguments filed in Amdt020904 have been fully considered but they are not persuasive.

(1) Applicants assert that it would be clear to one of ordinary skill in the art in the olefin and toner art that the intrinsic viscosity would be measured in decalin at 135°C. Applicants assert support for the definition of intrinsic viscosity "as measured in decalin at 135°C" is found in the US patents, in particular US 6,210,852 (US'852), provided by applicants in Appendices 2 and 3 attached to Amdt120202 (i.e., Paper No. 25). Applicants further assert that the values reported in the instant application "can only be measured in decalin at 135°C."

As previously discussed in the CTNF050903, paragraph 4, pages 5-6, upon review of the originally filed specification, applicants' "definition" of intrinsic viscosity would not have been obvious to a person having ordinary skill in the art. As discussed in the objection in item (1) above, the originally filed specification is silent on the conditions under which the intrinsic viscosity is determined. There is no disclosure in the originally filed specification to support applicants'

Art Unit: 1756

allegation that the intrinsic viscosity disclosed in the specification is determined in decalin at 135°C.

The disclosures in the US patents provided by applicants are not part of the originally filed specification. As noted by applicants, US 6,210,852 (US'852) was filed after the filing date of the instant application, and is therefore not prior art. Moreover, even if US'852 was prior art, US'852 does not show that "the same polymer defines that the intrinsic viscosity is measured at 135°C in decalin" as alleged by applicants in Paper No. 25, page 11, lines 20-22. In Amdt020904, page 10, lines 16-18, applicants state that the preferred monomers, ethylene and norbornene, disclosed in US 6,210,852 are the same preferred monomers disclosed in the instant application. However, as discussed in CTNF050904, the cyclic olefins disclosed in US'852 do not appear to be same as those disclosed in the instant application. US'852 exemplifies polyolefin polymers having viscosity numbers of 130 and 17 dl/g. See US'852, col. 12, lines 22 and 33. US'852 does not report the intrinsic viscosity values of said copolymers. The instant specification reports that the commercially available polyolefins it used have intrinsic viscosities of 0.19, 0.8, or less than or equal to 0.25 dl/g, respectively. See the instant specification, page 11, lines 13-16. In addition, US'852's

Art Unit: 1756

copolymers have Tg's and molecular weights that differ from those polymers used in the instant application. US'852 also does not report the heat distortion temperatures (HDT) of the copolymers. Thus, there is no basis to conclude that US'852 shows that the intrinsic viscosity disclosed in the instant specification was determined in decalin at 135°C.

Moreover, applicants' assertion that the measurement of intrinsic viscosity in decalin at 135°C is the standard in the art, based on their limited showing of nine patents, is not persuasive. As discussed in CTNF050903, the prior art of record shows that the intrinsic viscosity of olefins need not be determined in decalin at 135°C, as alleged by applicants. For example, US 5,717,039 at col. 22, lines 4-8, discloses that usually ethylene alpha-olefin polymers possess an intrinsic viscosity at 135°C in TETRALIN (i.e, tetrahydronaphthalene, see Grant & Hackh's Chemical Dictionary, fifth edition, page 582) of between about 0.025 and about 0.6 dl/g. Also see, US 5,039,766, col. 6, lines 38-39, and US 5,759,469, col. 4, lines 65-66. US 3,922,256 at col. 1, lines 25-27, reports the intrinsic viscosity of an alpha olefin polymer determined in toluene at 25°C. US 5,179,156 at col. 3, lines 61-62, reports the intrinsic viscosity of an ethylene propylene copolymer determined in

Art Unit: 1756

xylene at 70°C. Thus, the values of intrinsic viscosity disclosed in the instant specification do not necessarily have to be those measured only in decalin at 135°C, as alleged by applicants.

Accordingly, the disclosure in the originally filed specification does not provide an adequate antecedent basis for applicants' alleged definition.

(2) Applicants assert that no additional version of DIN 53461-B was issued between the version of January 1987 and "the priority date of this patent application (Aug. 02, 85 [sic: 1995])." To support applicants' assertion, applicants provide copies of the cover page of DIN 53461-B revised in January 1987 and the front page indicating that the DIN version of January 1987 was withdrawn in 1996. Applicants state that "[i]t is clear that this revision [January 1987 version] would be one applicable unless the applicants stated that the earlier revision [of 1969] was applicable."

However, as discussed in the objection in item (2) above, there is no disclosure in the originally filed specification that would have lead a person having ordinary skill in the art to the conclusion that the version of the German DIN standard disclosed in the specification was that of January 1987. Nor is there any evidence on the present record that shows that the

Art Unit: 1756

January 1987 version was the version currently used at the time the application was filed. Applicants' assertions are merely attorney arguments that are not supported by any evidence. Applicants' documents of support are illegible and are in the German language. Applicants have not provided a certified translation of the documents. Nor has applicants provided an affidavit from an expert in the art that the DIN 5341-B of January 1987 was that used in the toner art during the filing date of the instant application.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 18, 19/18, 21/18, 24/18, 25/18, 34/(16, 18), and 35/18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 18, 19/18, 21/18, 24/18, 25/18, 34/18, and 35/18 are indefinite in the phrase "the binder resin further comprises a

Art Unit: 1756

polyolefin resin having a cyclic structure having: (i) a low-viscosity resin . . . (ii) a high-viscosity resin . . . wherein the polyolefin resin is a copolymer derived from an alicyclic compound having one double bond . . .” (emphasis added) for lack of unambiguous antecedent basis in instant claim 17 from which claim 18 depends. Claim 17 recites a binder resin comprising a polyolefin resin having a cyclic structure having a particular low viscosity resin and a particular high viscosity resin. It is not clear whether “a polyolefin resin having a cyclic structure” recited in claim 18 refers to the polyolefin resin having a cyclic structure recited in claim 17 or to another polyolefin resin having a cyclic structure.

If “a polyolefin resin having a cyclic structure” recited in instant claim 18 refers to another polyolefin resin having a cyclic structure other than the resin recited in instant claim 17, claims 24/18 and 25/18 are further indefinite for lack of unambiguous antecedent basis. It is not clear to what polyolefin having a cyclic structure (i.e., that of claim 17, or that of claim 18, or both) comprises the groups recited in instant claims 24 and 25.

Claim 34/16 is indefinite because the phrase “said polyolefin resin with a cyclic structure having an intrinsic viscosity . . . and a weight average molecular weight of 15,000

Art Unit: 1756

or more, as measured by GPC" (emphasis added) lacks antecedent basis in claim 16. Claim 16 does not recite the presence of the particular polyolefin recited in instant claim 34, but merely recites that the toner comprises a polyolefin copolymer resin having a cyclic structure derived from an alpha-olefin, an alicyclic compound, and, optionally, a diene monomer.

Applicants' arguments filed in Amdt020904 regarding the rejection of claim 34/16 have been fully considered but they are not persuasive. Applicants assert that the amendment to claim 22 overcomes the rejection.

However, claim 22 was cancelled and rewritten as new claim 34. Claim 34 does not overcome the rejection for the reasons discussed supra.

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 16, 17, 18, 19/(17,18), 21/(16,17,18), 24/(16,17,18), 25/(16,17,18), 28, 31, 33, 34/(16,17,18), and

Art Unit: 1756

35/(16,17,18) are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

(1) Instant claims 16, 17, 18, and 28 and claims dependent thereon recite that the polyolefin resin having a cyclic structure is a copolymer derived from an alpha-olefin and an alicyclic compound having "one double bond."

The originally filed specification does not provide an adequate written description of said alicyclic compound having "one double bond" as recited in the instant claims. The originally filed specification at page 4, lines 32-34, discloses that a copolymer of an alpha olefin with "an alicyclic compound having a double bond, such as cyclohexene or norbornene." There is no disclosure of the broadly recited subgeneric species "alicyclic compound having one double bond" as recited in the instant claims. Nor is there any appreciation in the originally filed specification for the broadly recited "alicyclic compound having one double bond." The subgeneric species recited in instant claims includes, not only the disclosed cyclohexene and norbornene monomers, but other non-disclosed alicyclic compounds

Art Unit: 1756

having one double bond that are not cyclohexene or norbornene, such as cyclobutene, tetracyclododecene, cyclopentene, etc. The disclosure of the two particular alicyclic compounds does not provide an adequate written description of the broad subgeneric species "alicyclic compound having one double bond" recited in the instant claims.

(2) Instant claims 17 and 18 and claims dependent thereon recite a low viscosity resin having a "heat distortion temperature (HDT) by DIN 53461-B of less than 70°C" and a high viscosity resin having a "HDT of 70°C or more." Claim 34 recites a polyolefin resin with a cyclic structure having a "heat distortion temperature (HDT) by DIN 53461-B of 70°C or more." The amendment to the specification at page 3, lines 11, filed on Dec. 2, 2002 (Amdt120202) defines the DIN 53461-B as the version of January 1987. The originally filed specification does not provide an adequate written description the standard DIN 53561-B as the version of January 1987. The originally filed specification was silent with respect to the version used. See for example, page 3, lines 6-7.

(3) Instant claims 17 and 18 and claims dependent thereon recite a low viscosity resin having an "intrinsic viscosity (i.v.) of less than 0.25 dl/g," and a high viscosity resin having an "i.v. of 0.25 dl/g or more." Claim 34 recites a

Art Unit: 1756

polyolefin resin with a cyclic structure having an "intrinsic viscosity of 0.25 dl/g or more." The amendment to the specification at page 3, line 11, filed on Dec. 2, 2002 (Amdt120202) defines the intrinsic viscosity as that "measured in decalin at 135°C." The originally filed specification does not provide an adequate written description of such an intrinsic viscosity. The originally filed specification does not disclose any conditions under which the intrinsic viscosity is determined. The working examples merely recite the values of intrinsic viscosity. Accordingly, the originally filed specification does not provide an adequate written description that the intrinsic viscosity is measured in decalin at 135°C, as now recited in the instant claims.

(4) If "a polyolefin copolymer having a cyclic structure" recited in instant claim 18 refers to another polyolefin copolymer that is not the polyolefin copolymer recited in instant claim 17, then claim 18 and claims dependent thereon are rejected for the following reasons.

The originally filed specification does not provide an adequate written description of a binder resin comprising two polyolefins, both comprising a particular low viscosity resin and a particular high viscosity resin. The originally filed specification at page 4, lines 20-22, discloses that the "binder

Art Unit: 1756

resin at least includes a polyolefin resin having a cyclic structure." The originally filed specification at page 5, lines 2-14, discloses that the "polyolefin of a cyclic structure . . . are a low-viscosity resin having a number average molecular weight of 1,000 to 7,500, preferably 3,000 to 7,500, and a weight average molecular weight of 1,000 to 15,000, preferably 4,000 to 15,000 . . . and a high-viscosity resin having number average molecular weight of 7,500 or more, preferably 7,500 to 50,000, and a weight average molecular weight of 15,000 or more, preferably 15,000 to 100,000 . . .". There are no examples of toners comprising a binder resin comprising two polyolefin resins, wherein both resins further comprise a particular low viscosity resin and a particular high viscosity resin. Applicants have not indicate where in the originally filed specification there is antecedent basis for a binder resin comprising two polyolefin resins as recited in instant claim 18.

Applicants' arguments filed in Amdt020904 with respect to the rejections in items (1) through (3) above have been fully considered but they are not persuasive.

Applicants' arguments regarding the rejections in items (2) and (3) above have been addressed in paragraph 3, supra.

Art Unit: 1756

With respect to the rejection set forth in item (1) above, applicants assert that support for the polyolefin resin having one double bond can be found at page 4, four lines from the bottom of the page, "compound having a double bond."

However, the disclosure of a "compound having a double bond" is not limited to compounds having one double bond, but includes compounds having one or more than one double bond. For the reasons discussed in item (1), the originally filed specification does not provide an adequate written description of the claim limitation "compound having one double bond" recited in the instant claims.

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. Claims 16, 21/16, 26-30, and 35/16 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,817,843 (Masuda) combined with US 5,741,617 (Inaba) and US 5,179,171 (Minami), as evidenced by the Aldrich Catalog, page 1063, and Polymer Technology Dictionary, page 487.

Masuda discloses a toner that comprises a colorant - a quinizarin dye and a binder resin. Col. 24, lines 57-62, and examples 63-88 at col. 50. Masuda discloses that said toner

Art Unit: 1756

provides clear color lightfastness images free from fogging.

Col. 50, lines 32-44.

Masuda discloses that the toner can further comprise an "antistatic agent" such as metals of salicylic acid, organic salts of boron, quaternary ammonium compounds, metal complexes of imidazole, and pyridinium salts. Col. 25, lines 33-39.

Masuda discloses that said antistatic agents control the electrification of the toner without affecting the color tone of the toner. Col. 25, lines 29-32. Masuda does not identify the antistatic agents as charge control agents as recited in the instant claims. However, the Masuda's antistatic agents have the same function as charge control agents, namely, to control the charge level, i.e., the electrification, of the toner.

Inaba identifies metals of salicylic acid, boron compounds, quaternary ammonium compounds, and imidazole compounds as charge control agents. Col. 13, lines 51-60. Accordingly, the antistatic agents disclosed by Masuda are charge control agents. The burden is on applicants to prove otherwise. In re Fitzgerald, 205 USPQ 594 (CCPA 1980).

Masuda does not disclose that the binder resin is a polyolefin resin having a cyclic structure as recited in the instant claims. However, Masuda discloses that the binder resin can be any binder resin known in the art. Col. 24, lines 61-62.

Art Unit: 1756

Masuda further discloses that the binder resin can be alicyclic hydrocarbon resins. Col. 25, lines 23-24.

Minami discloses a random copolymer resin having a cyclic structure that is within the compositional limitations recited in the instant claims. Minami discloses that the low molecular weight random copolymers can be used as electrophotographic toners. Col. 15, lines 58-59, and col. 16, line 2. The random copolymer is obtained from ethylene and at least one cycloolefin, such as bicyclo[2,2,1]hept-2-ene, which is incorporated in the polymer chain without ring opening. Col. 4, line 30, to col. 8, line 5, and especially col. 6, line 50. The random copolymer comprises saturated alicyclic groups, and is thus within the compositional limitation recited in claim 16. Ethylene and the cycloolefin are within the limitations recited in claims 16 and 21/16. A copolymer of ethylene and bicyclo[2,2,1]hept-2-ene, which is another name for norbornene (see Aldrich Catalog, page 1063), meets the copolymer recited in instant claims 26 and 28-30. Minami discloses that said copolymer is formed by copolymerizing ethylene and the cycloolefin in the presence of a catalyst. The catalyst comprises a soluble vanadium compound and an aluminum alkyl compound. Col. 8, line 11, to col. 9, line 50. Such a catalyst is recognized as a Ziegler-Natta catalyst system. See Polymer

Art Unit: 1756

Technology Dictionary, page 487. Thus, Minami's copolymer is made by a Ziegler catalyst as recited in instant claim 27.

Minami teaches that its random copolymers have excellent transparency, thermal resistance, dielectric properties, and mechanical properties. Col. 4, lines 16-21.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Minami, to use Minami's random copolymer obtained from ethylene and a cycloolefin, such as norbornene, as the binder resin in the toner disclosed by Masuda, because that person would have had a reasonable expectation of successfully obtaining an electrophotographic color toner having the properties disclosed by Masuda and excellent transparency.

The recitation in instant claims 16, 26, and 28 that the toner can be used for "developing an . . . image . . . wherein the . . . image is fixed by the action of a heated roller" is a recitation of intended use, which does not distinguish the toner recited in the instant claims from the toner rendered obvious over the cited prior art. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended

Art Unit: 1756

use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

Applicants' arguments filed in Amdt020904 have been fully considered but they are not persuasive.

Applicants argue that the Masuda patent does not recognize the advantages of applicants' claimed binder resin. Applicants argue that the term "alicyclic hydrocarbon resins" used in Masuda cannot be construed to refer to the instantly used binder-copolymers, referring to the book "Hydrocarbon Resins" from Mildenberg et al. Applicants further assert that the "Minami patent cannot be used as a secondary reference as the use for the products is 'electrophotographic toner' instead of 'binder resin for a toner.'" Applicants argue that there is no motivation to use a cyclic olefin, as recited in the instant claims, in Masuda's toner.

However, the reasons for combining the references do not have to be those of applicants. As discussed in the rejection, the references do provide reason, suggestion, and motivation, to use Minami's cyclic olefin copolymer as the toner binder resin in Masuda's toner. Masuda discloses that the toner binder resin can be any well-known toner binder resin in the art. Masuda discloses that such resins include "alicyclic hydrocarbon resins."

Art Unit: 1756

Applicants' arguments that alicyclic hydrocarbon resin disclosed in Matsuda does not include the binder-copolymer recited in the instant claims are not persuasive because applicants' reference to Mildenberg is not prior art. The reference has copyright date of 1997, which is after the PCT filing date of Jul. 29, 1996. Even if the reference to Mildenberg were prior art, applicants have not stated why the Mildenberg's description of hydrocarbon resins does not include copolymers of ethylene and a hydrocarbon alicyclic compound having one double bond. As noted in Kirk-Othmer Encyclopedia of Chemical Technology, fourth edition, Vol. 13 (1995), page 717, first full paragraph, lines 1-4, the term "[h]ydrocarbon resin is a broad term that is usually used to describe a low molecular weight thermoplastic polymer synthesized via the thermal or catalytic polymerization of coal-tar fractions, cracked petroleum distillates, terpenes, or pure olefinic monomers" (emphasis added). Thus, the broad definition of the term "alicyclic hydrocarbon resins" appears to encompass Minami's cyclic olefin copolymers. Moreover, even if the term "alicyclic hydrocarbon resins" does not encompass Minami's cyclic olefin copolymers, Masuda also discloses that the binder resin can also be any known binder resin such as "copolymers of olefin type compounds such as ethylene." Col. 25, lines 20-21.

Art Unit: 1756

Copolymers of "olefin type" compounds such as ethylene clearly encompass Minami's cyclic olefin copolymers obtained from ethylene and norbornene.

As discussed in the rejection, Minami teaches cyclic olefin copolymers, which meet the cyclic polyolefin recited in the instant claims. Minami discloses that its copolymers have excellent thermal resistance in addition to excellent dielectric properties, mechanical properties, and transparency. Minami teaches that said copolymers can be used in electrophotographic toners. Accordingly, Minami provides reason, suggestion, and motivation to a person having ordinary skill in the art to use its cyclic olefin copolymer as the toner binder resin in Masuda's toner.

Applicants' assertion that Minami's disclosure that its copolymers can be used in electrophotographic toners does not include the use as toner binder resins is not persuasive. Minami does not disclose that its copolymers cannot be used as binder resins in toners. Furthermore, as discussed supra, Matsuda teaches that well-known toner binder resins include "alicyclic hydrocarbon resins" and "copolymers of olefin type compounds such as ethylene." Based on the disclosures in Matsuda and Minami, a person having ordinary skill in the art

Art Unit: 1756

would have recognized clearly that Minami's cyclic olefin copolymer can be used as a toner binder resin.

Accordingly, for the reasons set forth above and in the rejection, Masuda combined with the teachings in Inaba and Minami renders obvious the instant claimed toner.

10. Claims 16, 21/16, 24/16, 26-33, and 35/16 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,292,609 (Yoshikawa) combined with Minami, as evidenced by the Aldrich Catalog, page 1063, and Polymer Technology Dictionary, page 487.

Yoshikawa discloses a toner that comprises a colorant, such as carbon black, a vinyl-based binder resin, a wax comprising two particular polyolefin waxes, and a charge control agent. Col. 2, lines 1-7, and examples 1-3 at cols. 7-8. Yoshikawa discloses that the colorant may also be phthalocyanine blue or quinacridone. Col. 4, lines 41-43. The colorants meet the colorant limitations recited in instant claims 30-33. Yoshikawa discloses that said toners may be used in the electrophotographic copying machine shown in Fig. 1, wherein the toner image, which is obtained by developing an electrostatic latent image with a toner, is fixed to a paper sheet with a heated roller 54. See Fig. 1, and col. 6, lines 18-57.

Yoshikawa discloses that said toner has excellent properties in

Art Unit: 1756

terms of anti-offset, conservation, fluidity, and fixation.

Col. 1, lines 64-68.

Yoshikawa does not disclose that the vinyl-based binder resin is a polyolefin resin having a cyclic structure as recited in the instant claims. However, Yoshikawa discloses that the vinyl-based binder resin can be ethylene-based copolymers or alicyclic hydrocarbon resins. Col. 4, lines 24 and 30.

Minami discloses a random copolymer resin having a cyclic structure that is within the compositional limitations recited in instant claims 16, 21/16, and 26-30. The discussions of Minami, the Aldrich Catalog, and the Polymer Technology Dictionary in paragraph 9 above are incorporated herein by reference. As discussed in paragraph 9 above, Minami discloses that the low molecular weight random copolymers can be used as electrophotographic toners. Minami further discloses that its random copolymer resin having a cyclic structure may be modified by grafting thereto a monomer having an alpha, beta-unsaturated carboxylic acid group, such as acrylic acid. Col.17, lines 40-43 and 58-67. The grafted random copolymer resin having a cyclic structure meets the compositional limitation recited in instant claim 24/16. According to Minami, the grafted random copolymer has the same excellent properties as the non-grafted random copolymer and also excellent adhesion to

Art Unit: 1756

metals and synthetic resins and good compatibility with other resins. Col. 17, lines 46-50.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Minami, to use the random copolymer obtained from ethylene and a cycloolefin, such as norbornene, or the modified random copolymer obtained from ethylene and a cycloolefin, such as norbornene, grafted with an alpha-beta-unsaturated carboxylic acid monomer, such as acrylic acid, both taught by Minami, as the vinyl-based binder resin in the toner disclosed by Yoshikawa, because that person would have had a reasonable expectation of successfully obtaining an electrophotographic color toner having the properties disclosed by Yoshikawa and excellent transparency.

11. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

Art Unit: 1756

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (571) 272-1382. The examiner can normally be reached Monday through Friday.

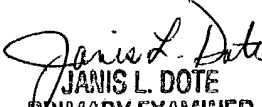
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (571) 272-1385. The central fax phone number is (703) 872-9306.

Any inquiry of papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Claudia Sullivan, whose telephone number is (571) 272-1052.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JLD

Apr. 27, 2004


JANIS L. DOTE
PRIMARY EXAMINER
GROUP 1500
1700